

**CHEMISTRY 4311W**  
**Advanced Organic Chemistry Laboratory – 4 credits**

University of Minnesota, Department of Chemistry  
Fall Semester 2019

## Contents

1. Getting Started/Communication	1
1.1 Course Objective	1
1.2 Goals	1
1.3 Instructor/Contact Information	1
1.4 Teaching Assistants/Contact Information	1
1.5 Stockroom	1
1.6 E-Mail Communications	1
1.7 Textbook	2
2. Grades and References	2
2.1 Grading	2
2.2 Enrichment Option	3
2.3 Reference Letters	3
3. Expectations	3
3.1 Credits and Workload	3
3.2 Due Dates, Absences, and Late Work	3
3.3 Reports/Notebooks/Computer Software/Websites	3
3.4 Scholastic Dishonesty	4
3.5 Student Conduct Code	4
3.6 Use of Personal Electronic Devices	5
4. Safety	5
5. Personal Support and Responsibilities	6
5.1 Disability Services	6
5.2 Mental Health and Stress Management	6
5.3 Diversity and Inclusion	6
5.4 Ally Statement	6
5.5 Sexual Harassment and Related	6
5.6 Additional Helpful Websites	6
6. Course Meetings/Due Dates/Calendar	7
6.1 Lecture	7
6.2 Laboratory	7
6.3 Assignments (with points), Due Dates, and Target Return Dates	8
6.4 Calendar	9
7. Final Words	9

## 1. Getting Started/Communication

### **1.1 COURSE OBJECTIVE:**

Acquire and demonstrate the skills necessary to achieve success when engaged in undergraduate directed research at the University of Minnesota, when pursuing graduate studies in chemistry or allied fields, or as an employee in industrial or academic chemistry labs.

### **1.2 GOALS:**

- Learn and appreciate relevant chemistry concepts.
- Develop your capacities for critical and independent thinking.
- Plan, implement, and optimize laboratory procedures in the area of organic chemistry synthesis, including the preparation, purification, and spectroscopic characterization of compounds.
- Learn and become proficient in computer-aided tools for literature retrieval, as well as for data acquisition and analysis.
- Communicate your experimental results and conclusions in a clear, accurate, and concise manner, with accepted scientific format and terminology. [Note: this is a writing-intensive course; for more information, please refer to [https://chem.umn.edu/sites/chem.umn.edu/files/writing\\_abilities\\_and\\_examples.pdf](https://chem.umn.edu/sites/chem.umn.edu/files/writing_abilities_and_examples.pdf)].

### **1.3 INSTRUCTOR/ CONTACT INFORMATION:**

Professor **George Barany**, 435 Smith Hall, 612-625-1028 (direct line and voice mail), [barany@umn.edu](mailto:barany@umn.edu) [please provide clear subject lines that make it obvious to me that your message is related to this course, Chem 4311W]. I try to visit the lab most days and am available for private meetings as needed [please use e-mail to set up appointments].

### **1.4 TEACHING ASSISTANTS/ CONTACT INFORMATION:**

**Connor Frye** ([frye0048@umn.edu](mailto:frye0048@umn.edu)) and **Shelby McGuire** ([mcgui472@umn.edu](mailto:mcgui472@umn.edu)). Outside of the laboratory, the TAs can be reached at the given e-mail addresses. These knowledgeable TAs are integral to the success of the course. They will attend lectures and contribute to the discussion; they will supervise the laboratories including to provide instructions for use of equipment and to consult on techniques and procedures; they will demonstrate software and internet resources, etc.; and they will grade notebooks and reports. Occasionally, issues arise that cannot be resolved directly with your TA or your instructor – in such cases, please contact Head Organic Chem TA **Casey Carpenter** ([carpe574@umn.edu](mailto:carpe574@umn.edu)).

While you are encouraged to be independent for most laboratory procedures, you will need to check in with your TA on each and every working day as you enter the lab, and check out with your TA as you leave that same day. In addition, certain experimental procedures and setups require TA approval and/or participation because of safety considerations. Finally, in the unfortunate circumstance that your experiment results in a spill, breakage, or any other sort of accident, *you must inform your TA immediately* so that a safe resolution, including cleanup, can be achieved.

### **1.5 STOCKROOM:**

**Patrick Schildt** ([schi0246@umn.edu](mailto:schi0246@umn.edu)) is the Lab Service Coordinator. The teaching stockroom, 595 Kolthoff, is staffed each day that we meet, from 12:20 – 4:25 P.M. The stockroom attendants are **Isaiah Ripley** ([riple101@umn.edu](mailto:riple101@umn.edu)) and **Cristina Youngren** ([youn1511@umn.edu](mailto:youn1511@umn.edu)), respectively Mo/We and Tu/Th (*subject to change*).

### **1.6 E-MAIL:**

E-mail is considered the official communication tool of the University of Minnesota, and you are expected to check your @umn.edu email account **at least twice daily**. As necessary, the TAs and I will use e-mail to convey announcements, clarifications, and other information items that are important for you to know about. This will include pdf versions of the weekly PowerPoint presentations, so that you can concentrate on learning material rather than taking notes. *Technical point:* In order to preserve the privacy of individual students, e-mails are sent to myself, and the email accounts of the entire class roster are pasted into the bcc (blind carbon copy) field. *Note:* This course **does not** have an associated Moodle or Canvas site.

**1.7  
TEXTBOOK:**

**J.W. Zubrick** “The Organic Chem Lab Survival Manual: A Student’s Guide to Techniques,” 10<sup>th</sup> edition, John Wiley & Sons, 2016 (ISBN: 9781118875780). Cost: \$83.75 (new), \$62.75 (used), \$50.25 (new rental), \$41.90 (used rental) or \$43.20 (e-book, 180 day subscription) from the University bookstore. The book is also available through amazon.com. While not optimal, it is probably OK to use an earlier edition.

Written guidance for experiments is provided via in-class handouts and/or e-mail.

**2. Grades and References**

**2.1  
GRADING:**

Lab Report 1	100
Lab Report 2	100
Lab Report 3	250
Final Report (like a scientific manuscript)	300
Computer software set up	25
Notebook check #1	25
Notebook check #2	25
Spectral data check #1	25
Spectral data check #2	25
Class engagement (i.e., pop quizzes, participation)	50
Lab engagement (i.e., attendance, participation)	25
Lab “citizenship” (i.e., safety, cleanliness)	25
Overall lab technique	25
<b>Total:</b>	<b>1000</b>

*There are no mid-semester exams and no final exam associated with this course.* Grading of lab reports, and other assessments, are carried out in a self-consistent manner by each TA for the cohort of students s/he is responsible for. Please let us know, at the beginning of the semester, if your preferred name and gender pronoun is different from that provided in the official University of Minnesota class roster.

The overall course grades will use the +/- system. The basic letter grades are defined by the University of Minnesota Senate as follows:

- A:** Achievement that is outstanding relative to level necessary to meet course requirements.
- B:** Achievement that is significantly above level necessary to meet course requirements.
- C:** Achievement that meets the course requirements in every respect.
- D:** Achievement that is worthy of credit, though it fails to meet fully the course requirements.
- F:** Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an “I” (incomplete).

It is hoped that every student will successfully complete and pass this course. However, if circumstances make it necessary to drop this course, you must officially withdraw, following the rules for your college, and arrange an earlier checkout with your TA.

**2.2  
ENRICHMENT  
OPTION:**

Some students will be able to complete all assigned work, including their Final Report, on an accelerated timeline. If this applies to you, please meet with your instructor and TA in order to plan a realistic program of additional experimental work that you can carry out during the final month of the semester. Your results will be reported in an Enrichment Bonus Report, due on the day of your checkout. Some of this work will challenge you to conduct yourself with a higher degree of independence, and you are encouraged to try more speculative approaches for which we cannot “guarantee” success. Students who pursue the enrichment option conscientiously will get a “bump” in their letter grade, e.g., from B<sup>+</sup> to A<sup>-</sup>. Students already carrying out work meriting the maximum grade of A, who also pursue the enrichment option, can expect an enthusiastic reference letter when applying for future opportunities.

**2.3  
REFERENCE  
LETTERS:**

A number of students come back to me several months or even several years after completing the course with requests that I write reference letters in support of their applications for jobs, graduate or professional schools, or honors. If you anticipate making such a request at a future date, please retain all of your returned, graded labs to show to me at the time of your request. This is necessary due to a University of Minnesota policy that requires me to destroy all grade records after one year.

**3. Expectations**

**3.1  
CREDITS AND  
WORKLOAD:**

One credit is normally defined as equivalent to an average (over a full semester) of three hours of learning effort per week necessary for an average student to achieve an average grade in the course. This particular 4-credit course meets for one hour of lecture and ten hours of lab per week [many students can complete their day’s work in less than five hours]. Technically, that leaves only another hour per week outside of the classroom and lab, but in practice, a student who will achieve an average grade might spend an additional five hours per week on preparations, reading, calculations, data analyses, and writing reports. Most students who will achieve an above-average grade devote even more time to this course. **Reminder:** There is no final exam, so that also allows you to increase the number of hours per week.

**3.2  
DUE DATES,  
ABSENCES, AND  
LATE WORK**

The majority of the points that determine your letter grade are based on three mid-semester reports and a Final Report that are turned in to your TA at the beginning of the appropriate lab session. Due dates and other relevant information are provided at the end of this Syllabus. Work that is turned in late will be given a 3% deduction for every day that it is late. However, the deadline for the Final Report cannot be extended; most students will submit it on the day that they checkout. Otherwise, the Final Report will be accepted up to the last day of instruction for the semester, i.e., Wednesday, December 11 (with no penalty). The TAs will grade work and return it to you in a timely manner, following which you may want to meet your TA and/or instructor for follow-up discussions about how you can improve your performance with the experimental work, as well as how it is written up.

We are not in a position to schedule makeup lab sessions. Legitimate absences such as major illness and/or family emergencies that affect a student’s ability to complete all assigned work will be considered on a case-by-case basis, and handled in a fair manner. See the following website for relevant University of Minnesota policies:  
<https://policy.umn.edu/education/makeupwork>

**3.3  
REPORTS /  
NOTEBOOKS /  
COMPUTER  
SOFTWARE /  
WEBSITES:**

An important part of being a capable chemist is the clear communication of your results to other chemists. There will be several reports due, each more sophisticated than the previous. Therefore, this course is considered “writing-intensive.” We provide a handout detailing what kind of information should appear in reports, including formatting issues, as well as what goes into a good laboratory notebook. Assignments and reports are turned in *directly* to your TA at the *beginning* of the lab period, and there is a modest penalty for late work.

Another important part of this course is to gain experience and competence with the use of computerized tools that allow you to access information about chemicals, draw structures, process spectroscopic data, etc. These include ChemDraw, Reaxys, SciFinder, and Web of Science, among others. We provide a detailed handout [different depending on whether you use PC or Mac] that specifies programs for you to download onto your own laptop, as well as useful websites that the University of Minnesota has licensed for student and staff access [*Important note:* Off-campus access to some of these programs and websites requires a virtual privacy network (VPN), and we also provide instructions on how to do this]. Programs are set up both in our laboratory and in the Chemistry Department Student Microcomputer lab [101D Smith; <https://chem.umn.edu/academics/resources/computer-lab>; open Monday – Thursday, 9:00 A.M. – 9:00 P.M.; Friday, 9:00 A.M. – 5:00 P.M.; Saturday, 11:00 A.M. – 4:00 P.M.], **Daniel MacEwan** ([chemcaim@umn.edu](mailto:chemcaim@umn.edu)), Computer-Aided Instruction Manager.

### **3.4 SCHOLASTIC DISHONESTY:**

You are expected to do your own academic work and cite sources as necessary. Failure to do so is considered **scholastic dishonesty**, and includes plagiarizing [which means misrepresenting as your own work any part of work done by another]; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

([https://regents.umn.edu/sites/regents.umn.edu/files/policies/Student\\_Conduct\\_Code.pdf](https://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf))

As a general matter of University of Minnesota policy, “a student who has been determined to have cheated may be given an “F” or an “N” for the course, and may face additional sanctions from the University.” For additional information, please see:  
<https://policy.umn.edu/education/instructorresp>

Specifically with respect to this laboratory course, there have been (thankfully, not many) occasions in the past when two or three students submitted work that was identical in some portions. This is not acceptable, and results in a severe grade penalty. Your data, interpretations, graphics, etc., must be your own.

The Office for Community Standards has compiled some useful information:  
<https://communitystandards.umn.edu/avoid-violations/avoiding-scholastic-dishonesty>

The University of Minnesota policies continue with: “If you have additional questions, please clarify with your instructor for the course.” In the context of this class, you are not allowed to collaborate on the *specifics* of assignments, but you are allowed (in fact are even encouraged) to consult with your TA and classmates about more general aspects. On the reports that you turn in for evaluation of your work in this class, it is absolutely necessary that you follow standard conventions followed by professional chemists for citing sources, be they written or on the internet, for the experimental procedures followed, for your interpretations of data, and for previously published work in the field that provides background and puts your own contributions into perspective.

### **3.5 STUDENT CONDUCT CODE:**

The University of Minnesota seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University of Minnesota, you are expected to adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: [https://regents.umn.edu/sites/regents.umn.edu/files/policies/Student\\_Conduct\\_Code.pdf](https://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf)

Note that the conduct code specifically addresses disruptive classroom conduct, which means “engaging in behavior that substantially or repeatedly interrupts either the instructor’s ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities.” Obviously, these considerations extend to our laboratories.

### **3.6 USE OF PERSONAL ELECTRONIC DEVICES:**

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <https://policy.umn.edu/education/studentresp>

The potential question about electronic devices during exams is not relevant to this course, but we have *no restrictions* on your use of electronic aids or computers inside and outside of the classroom and the lab as a way for you to access information, take notes, and process your data. It is unacceptable to use electronic devices or computers for any purpose unrelated to our learning goals, e.g., checking your Facebook page, texting your friends, or watching YouTube clips or complete TV shows or movies, etc., etc. [don’t laugh, I have seen students do all of these during class]. Also, the ringers on your cell phones should be turned to mute or vibrate, and if you happen to like Sudoku, KenKen, or (especially) crossword puzzles, I will be happy to provide you with some, but please do not insult me or your fellow students who are here to learn by solving such puzzles during class time.

## 4. Safety

### **4. SAFETY**

You must have approved safety goggles on at all times in order to protect your eyes, and you must wear appropriate clothing and shoes that minimize exposed skin. Specifically, we do not absolutely require, but strongly recommend, that you wear a lab coat. Food and beverages are not allowed in the laboratory. While working, you should not be listening to music, including with headphones. If you receive a cell-phone call, please conduct your conversation outside of the laboratory, e.g., in the hallway.

*Before you are allowed to run your first experiment, you must complete three on-line safety modules “Chemical Safety,” “Introduction to Research Safety,” and “Chemical Waste Management” that are found at <https://www.uhs.umn.edu/new-lab>, and submit to your TA the relevant printouts documenting your name and score [this requirement is waived if you can document having passed these previously, e.g., if you are carrying out directed research in the Chemistry Department]. The due dates for these are Monday, September 9 (Mo/We students) and Tuesday, September 10 (Tu/Th students), at the start of the lab period.*

Any student found performing unauthorized experiments or behaving in an unsafe manner may be removed from the laboratory at any time. The teaching team (instructor, TAs, and/or stockroom staff) determines whether or not behavior is unsafe, and this includes failure to respond to instructions in a timely manner. Depending on the circumstances, removal from the laboratory may be as short as the remainder of the current lab period or as long as the entire remainder of the course.

## 5. Personal Support and Responsibilities

### **5.1 DISABILITY SERVICES:**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 or go to <https://diversity.umn.edu/disability/> to arrange a confidential discussion regarding equitable access and reasonable accommodations. If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course.

### **5.2 MENTAL HEALTH AND STRESS MANAGEMENT:**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating, and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via <http://www.mentalhealth.umn.edu/>

### **5.3 DIVERSITY AND INCLUSION:**

We welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences to this course. Instructors, teaching assistants, and peer students are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. This is in agreement with university policy:

[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity\\_Diversity\\_EO\\_AA.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf)

Collaboration among people of all cultures and backgrounds enhances our experiences and contributes to excellence in teaching, learning, and research. We strive for a climate that celebrates our differences and strengthens our department by embracing and working to increase diversity, equity, and inclusion. For more information about our departmental efforts and upcoming activities: <https://chem.umn.edu/about-us/diversity/department-efforts>. For a list of diversity related resources: <https://chem.umn.edu/about-us/diversity/diversity-inclusion-resources>.

### **5.4 ALLY STATEMENT:**

I strive to serve as an effective Ally for students who hold marginalized identities. I am available to listen and support you in a safe and confidential manner. I can help connect you with resources to help address barriers that may interfere with your academic and social success on campus as related to diversity, access, or safety. My goal is to help students be successful and to maintain a safe, accessible, and equitable campus.

### **5.5 SEXUAL HARASSMENT AND RELATED**

In this course, we strive to provide a safe and positive environment for everyone. Please review policy regarding sexual harassment and related topics:

<https://policy.umn.edu/hr/sexharassassault>

For support and help please contact the Aurora Center: <http://aurora.umn.edu>

### **5.6 ADDITIONAL HELPFUL WEBSITES:**

#### **Appropriate Student Use of Class Notes and Course Materials:**

<https://policy.umn.edu/education/studentresp>

**Student Conflict Resolution Center:** <http://www.sos.umn.edu>

## 6. Course Meetings/Due Dates/Calendar

### **6.1 LECTURE:**

**Tuesday, 12:20 – 1:10 P.M., 331 Smith Hall.** The purpose of the lecture period is to announce and discuss specific and general aspects of the subject matter, and to distribute all course handouts. While attendance is not taken, it is very much in your best interests to be present for all lecture sessions. Note that occasional pop quizzes given during the lecture period will be factored into your grade.

**Additional Lectures.** For each of the first two weeks of the course, we will have a mandatory bonus lecture/recitation in our laboratory classroom (594 Kolthoff) during your assigned lab period. Have your laptop computer with you, and expect these sessions to be quite long. Our goal is to demonstrate the use of various software and internet resources that are essential for your success in this course.

### **6.2 LABORATORY / STOCKROOM:**

All of our experimental work is carried out in 594 Kolthoff. Your TA will provide guidance as to what procedures can be carried out at your bench, but the overwhelming majority of procedures (including overnight reactions) will be carried out in the fume hoods. We will do our best to avoid carrying out wet chemistry too close to the instruments, which are mostly located on the east end of the laboratory.

You are assigned to either:

**Section 002:** Monday and Wednesday, 12:20 – 5:20 P.M. (TA: **Connor Frye**)

**Section 003:** Tuesday 1:25 – 6:25 P.M. and Thursday 12:20 – 5:20 P.M.  
(TA: **Shelby McGuire**)

Due to safety rules limiting the number of students in any given laboratory at a given time, you are allowed to work only within your assigned time period.

**6.3 Assignments (with points), Due Dates, and Target Return Dates**  
 (subject to change if unusual circumstances come up; see relevant policies in the Syllabus)

<b>Lecture Begins</b>	All, Tues, Sept 3			
<b>Check-in / Supplementary 1</b>	Mo/We Wed, Sept 4	Tu/Th Thurs, Sept 5		
<b>Safety modules</b> (part of lab citizenship - safety quizzes must be completed before starting any lab work)				<b>25 pts</b>
	Mo/We <b>due Sept 9 (start of lab period)</b>	Tu/Th <b>due Sept 10 (start of lab period)</b>		
<b>Computer software setup</b>				<b>25 pts</b>
<b>Supplementary 2</b>	Mo/We <b>due Sept 9 (start of lab period)</b>	Tu/Th <b>due Sept 10 (start of lab period)</b>		
<b>Lab Closed (Thanksgiving)</b>	Mo/We Wed, Sept 11	Tu/Th Thurs, Sept 12		
<b>Check-out</b>	Mo/We Wed, Nov 27	Tu/Th Thurs, Nov 28		
	Mo/We Dec 9	Tu/Th Dec 10		
<b>Notebook check 1</b>	Weeks 3-8	Randomly checked at TA discretion during lab		<b>25 pts</b>
<b>Notebook check 2</b>	Weeks 9-14	Randomly checked at TA discretion during lab		<b>25 pts</b>
<b>Spectra check 1</b>	Weeks 3-8	Randomly checked at TA discretion during lab		<b>25 pts</b>
<b>Spectra check 2</b>	Weeks 9-14	Randomly checked at TA discretion during lab		<b>25 pts</b>
<b>Class engagement</b>	Intermittent	i.e., Pop quizzes, attendance, participation		<b>50 pts</b>
<b>Lab engagement</b>	Intermittent	i.e., Attendance, participation		<b>25 pts</b>
<b>Overall lab technique</b>	Intermittent	TA Observations		<b>25 pts</b>
<b>Experiment #1: Green Chemistry: Diels-Alder Reaction in Water</b>	<i>Suggested up to 3 lab periods</i>			<b>100 pts</b>
Start date:	Mo/We Mon, Sept 9	Tu/Th Tues, Sept 10		
Draft Report 1:	Mo/We <b>due: Sept 30</b> , return: Oct 7	Tu/Th <b>due: Oct 1</b> , return: Oct 8		
Report:	Mo/We <b>due: Oct 14</b> , return: Oct 21	Tu/Th <b>due: Oct 15</b> , return: Oct 22		
<b>Experiment #2: Compound Identification</b>	<i>Suggested up to 3 lab periods</i>			<b>100 pts</b>
Earliest start date <sup>Δ</sup> :	Mo/We Sept 16	Tu/Th Sept 17		
Compound Identification:	Mo/We <b>due: Oct 7</b>	Tu/Th <b>due: Oct 8</b>		
Report:	Mo/We <b>due: Oct 21</b> , return: Oct 30	Tu/Th <b>due: Oct 22</b> , return: Oct 31		
<b>Experiment #3: Amino Acid and Peptide Chemistry: Preparation and Characterization of Diketopiperazines</b>	<i>Suggested up to 10 lab periods</i>			<b>250 pts</b>
Earliest start date <sup>Δ</sup> :	Mo/We Sept 23	Tu/Th Sept 24		
Draft Report 3:	Mo/We <b>due: Oct 28</b> , return: Nov 4	Tu/Th <b>due: Oct 29</b> , return: Nov 5		
Report:	Mo/We <b>due: Nov 11</b> , return: Nov 20	Tu/Th <b>due: Nov 12</b> , return: Nov 21		
<b>Experiment #4: Amino Acid and Peptide Chemistry: Hydantoins and Diketopiperazines</b>	<i>Suggested up to 13 lab periods</i>			<b>300 pts</b>
Earliest start date <sup>Δ</sup> :	Mo/We Oct 21	Tu/Th Oct 22		
Draft Report 4 <sup>◊</sup> (hard deadline*)	Mo/We <b>due: Nov 25</b> , return: Dec 3	Tu/Th <b>due: Nov 26</b> , return: Dec 4		
Final Report <sup>Δ, +</sup> :	All: due during your lab period on Dec 9 or Dec 10, or on Dec 11 to your TA			
<b>TOTAL:</b>				<b>1000 pts</b>

<sup>Δ</sup> Suggested start date to stay on schedule

<sup>◊</sup> Note that Draft Report 4 may include plans for experiments that have not yet been completed

\* May turn in earlier (extra challenge this semester due to timing of Thanksgiving holiday!)

<sup>λ</sup> If you can commit to turning in **Final Report** by **Dec 2 (Mo/We) or Dec 3 (Tu/Th)**, i.e., *a week early*, you may begin experimental work for the **Enrichment Option** on **Nov 13 (Mo/We) or Nov 14 (Tu/Th)**. **Enrichment Bonus Report due no later than Dec 11 (both sections)**.

<sup>+</sup> Please provide stamped, self-addressed envelope for return

#### 6.4 Calendar

Lecture each Tuesday, 12:20 – 1:10 P.M.; additional lecture dates noted on calendar - see § 6.1.

##### September

week	Monday	Tuesday	Wednesday	Thursday
1		3	4 check-in & lecture	5 check-in & lecture
2	9	10	11 lecture	12 lecture
3	16	17	18	19
4	23	24	25	26
5	30			

##### October

week	Monday	Tuesday	Wednesday	Thursday
5		1	2	3
6	7	8	9	10
7	14	15	16	17
8	21	22	23	24
9	28	29	30	31

##### November

week	Monday	Tuesday	Wednesday	Thursday
10	4	5	6	7
11	11	12	13	14
12	18	19	20	21
13	25	26	27 	28 No Lab

##### December

week	Monday	Tuesday	Wednesday	Thursday
14		2	3	4
15		9 check out	10 check out	11

Key:  - Mo/We due dates

 - Tu/Th due dates

Suggested lab periods: Experiment 1 - ....

Experiment 2 - - - - -

Experiment 3 - - - - -

Experiment 4 - - - - -

Note that the schedule assumes overlap of labs, i.e., finishing up one lab while starting the next.

#### 7. Final Words

Excellence will be rewarded. Your grade is a function of your own diligence and efforts. The TAs and I work hard to provide every opportunity for each student in this class to be successful. The study of organic chemistry is not a competition. It is a learning experience. In terms of the laboratory experience: **come prepared, work safely, be accurate, and keep your eyes open.**